

IN THE CLAIMS:

Please amend claims 1, 4, 5, 8-9, 11-13 and 15-36 and add claims 37-44 as follows.

1. (Currently Amended) A communication method in a radio system ~~comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface~~, the method comprising:

associating each data unit~~units of each~~ a logical channel with a logical channel-specific sequence number~~numbers in a medium access control entity of a transmitter~~transmitting user terminal.

2. (Original) The method of claim 1, further comprising:

receiving, in the network infrastructure, data units of at least one logical channel associated with sequence numbers in the user terminal; and
arranging, in a network element of the network infrastructure, the data units of each logical channel in order of the sequence numbers associated with the data units.

3. (Original) The method of claim 1, further comprising performing at least one retransmission including at least one data unit of a logical channel from the user terminal to the network infrastructure over the air interface.

4. (Currently Amended) The method of claim ~~4~~36, further comprising:

associating each data unit of one transmission time interval with one sequence number; and

associating data units in successive transmission time intervals with successive sequence numbers.

5. (Currently Amended) The method of claim ~~4~~36, further comprising:

associating data units of one transmission time interval with successive sequence numbers; and

associating data units in successive transmission time intervals with successive sequence numbers.

6. (Original) The method of claim 1, further comprising:

mapping medium access control-e flows from a medium access control-d entity to transport channels in a medium access control-e entity of the user terminal; and

associating data units with sequence numbers common to the medium access control-d entity and the medium access-e entity.

7. (Original) The method of claim 1, further comprising transmitting the data units using enhanced uplink dedicated channel.

8. (Currently Amended) ~~A communication method in a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the method comprising~~ The method of claim 36, further comprising:

associating each data unit~~units~~ of ~~a~~each logical channel to be send withing one transmission time interval with one sequence number~~numbers~~ in a medium access control-d entity, in a radio link control entity or in an entity between the radio link control entity and the medium access control-d entity of the transmitter~~a user terminal~~.

9. (Currently Amended) The method of claim 8, further comprising arranging the data units of each logical channel in the radio link control entity, in the medium access control-d entity or in the entity between the radio link control entity and the medium access control-d entity of a ~~network element of the network infrastructure~~receiver.

10. (Original) The method of claim 8, further comprising arranging the data units in a radio network controller.

11. (Currently Amended) ~~A communication method in a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the method comprising:~~

receiving, in the network infrastructure, data units of at least one logical channel, each data unit sent within one transmission time interval being associated with one logical channel-specific sequence numbers in the user terminal; and arranging the data units of each logical channel in a network element of the network infrastructure.

12. (Currently Amended) The method of claim 36, further comprising: A ~~communication method in a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the method comprising:~~

associating each data unit of a logical channel in one transmission time interval with one sequence number by giving a common medium access control-e header to medium access control-d data units having the same logical channel number and the same sequence number; and

associating data units in successive transmission time intervals with successive sequence numbers in a ~~transmitting user terminal~~ transmitter.

13. (Currently Amended) The method of claim 12, further comprising:
receiving, in the network infrastructure, data units of at least one logical channel associated with sequence numbers in the user terminal; and

arranging, in the network infrastructure, the data units in order of the sequence numbers associated with the data units ~~in the network infrastructure~~.

14. (Original) The method of claim 12, further comprising performing at least one retransmission including at least one data unit of a logical channel from the user terminal to the network infrastructure over the air interface.

15. (Currently Amended) The method of claim 12, further comprising:
~~associating data units with sequence numbers by giving a common medium access control-e header to medium access control-d data units having the same logical channel number and the same sequence number; and~~
arranging the data units in order of the sequence numbers associated with the data units in a medium access control-e entity in ~~the network infrastructure~~a receiver.

16. (Currently Amended) A computer program product of a radio system comprising ~~a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface~~, the computer program product being embodied on a computer readable medium and comprising program code for controlling a processor to execute a method comprising:

associating comprising data unit~~each data unit of a~~ logical channel that are associated with a logical channel-specific sequence number~~numbers~~ in a medium access control entity of a transmitter~~transmitting user terminal~~.

17. (Currently Amended) The computer program product of claim 16, wherein the method comprises associating each data unit of a logical channel with sequence numbers in a medium access control entity of a user terminal.~~A computer program product of a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the computer program product comprising data units of each logical channel that are associated with sequence numbers in a medium access control entity, in a radio link control entity or in an entity between the radio link control entity and the medium access control entity of a user terminal.~~

18. (Currently Amended) The computer program product of claim 17, wherein the data medium access control entity of the network entity of the network element of the network infrastructure, the data units of each logical channel transmitted from the user terminal are arranged in order of the sequence numbers associated with the data units.

~~units of each logical channel that are arranged in the radio link control entity, in the medium access control entity or in the entity between the radio link control entity~~

~~and the medium access control-d entity of a network element of the network infrastructure.~~

19. (Currently Amended) The computer program product of claim ~~16~~³⁸, wherein data units of each logical channel are associated with sequence numbers in a medium access control-d entity, in a radio link control entity or at an entity between the radio link control entity and the medium access control-d entity of the user terminal.

~~in the network element of the network infrastructure, the data units of each logical channel transmitted from the user terminal are arranged in order of the sequence numbers associated with the data units.~~

20. (Currently Amended) The computer program product of claim 16, the method further comprising at least one retransmission including at least one data unit of a logical channel between the user terminal and the network infrastructure over the air interface ~~wherein data units of each logical channel are associated with sequence numbers in a medium access control-d entity, in a radio link control entity or at an entity between the radio link control entity and the medium access control-d entity of the user terminal.~~

21. (Currently Amended) The computer program product of claim ~~38~~¹⁷, wherein the method comprises

associating each data unit, of a logical channel in one transmission time interval,
with one sequence number; and

associating data units in successive transmission time intervals with successive
sequence numbers in a medium access control entity of a transmitter~~data units of each~~
~~logical channel are arranged in order according to the sequence numbers in the medium~~
~~access control entity, in the radio link control entity or in the entity between the radio~~
~~link control entity and the medium access control entity of the network element of the~~
~~network infrastructure.~~

22. (Currently Amended) The computer program product of claim 1621, wherein
the data units transmitted from the user terminal are arranged, in the network
infrastructure, in order of the sequence numbers associated with the data units.

~~at least one retransmission including at least one data unit of a logical channel~~
~~from the user terminal to the network infrastructure over the air interface is performed.~~

23. (Currently Amended) The A computer program product of claim 21, wherein
the method further comprises performing at least one retransmission including at least
one data unit of a logical channel between the user terminal and the network infrastructure
over the air interface.

~~a radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, the computer program product comprising:~~

~~-data units of a logical channel in one transmission time interval wherein each data unit is associated with one sequence number; and~~
~~data units in successive transmission time intervals are associated with successive sequence numbers in a transmitting user terminal.~~

24. (Currently Amended) ~~The~~A computer program product of a radio system, the computer program product being embodied on a computer readable medium and comprising program code for controlling a processor to execute a method comprising:
arranging data units of each logical channel, in a network element of the network infrastructure, in order of the sequence numbers, each data unit of a logical channel being associated with a logical channel-specific sequence number in a medium access control entity of a transmitter.

~~claim 23, wherein the data units transmitted from the user terminal are arranged in order of the sequence numbers associated with the data units in the network infrastructure.~~

25. (Currently Amended) A network element of a radio system, wherein the network element is a part of the network infrastructure;

the network element is configured to receive data units of at least one logical channel from a user terminal, each data unit of a logical channel sent being associated with a logical channel-specific sequence number in a medium access control entity of a user terminal; and

the network element is configured to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units.

~~The computer program product of claim 23, wherein at least one retransmission including at least one data unit of a logical channel from the user terminal to the network infrastructure over the air interface is performed.~~

26. (Currently Amended) The network element of claim 42, wherein the radio network controller is configured to arrange the data units of each logical channel in order of the sequence numbers in a medium access control entity, in a radio link control entity or at an entity between a radio link control entity and a medium access control entity.

~~A computer program product of a radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, the computer program product comprising data units of each logical channel that are arranged, in a network element of the network infrastructure, in order of the sequence numbers associated with the data units in the user terminal.~~

27. (Currently Amended) A radio network controller of a radio system, wherein the radio network controller is configured:

to receive data units of at least one logical channel from a user terminal, each data unit of a logical channel sent within on transmission time interval being associated with a logical channel-specific sequence numbers in the user terminal; and

to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units. ~~A network element of a radio system comprising a network infrastructure, and at least one user terminal is configured to communicate with the network infrastructure over an air interface, wherein~~

~~the network element is a part of the network infrastructure;~~

~~the network element is configured to receive data units of each logical channel from a user terminal, the data units being associated with sequence numbers in a user terminal; and~~

~~the network element is configured to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units.~~

28. (Currently Amended) A user terminal of a radio system comprising a network infrastructure, wherein a user terminal is configured to associate each data unit of a logical channel with a logical channel-specific sequence number in a medium access control entity. ~~The network element of claim 27, wherein the radio network controller is configured to arrange the data units of each logical channel in order of the sequence~~

~~numbers in a medium access control entity, in a radio link control entity or at an entity between a radio link control entity and a medium access control entity.~~

29. (Currently Amended) The user terminal of claim 40, wherein the user terminal is configured to associate data units of each logical channel with sequence numbers in a medium access control entity, in a radio link control entity or at an entity between a radio link control entity and a medium access control entity of a user terminal.

~~A radio network controller of a radio system comprising a network infrastructure, and at least one user terminal is configured to communicate with the network infrastructure over an air interface, wherein the radio network controller is configured:~~

~~to receive data units of each logical channel from a user terminal, the data units being associated with sequence numbers in the user terminal; and~~

~~to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units.~~

30. (Currently Amended) AThe user terminal of claim 29, wherein the user terminal is configured to transmit the data units to the network infrastructure and to perform at least one retransmission as a response to a request from the network infrastructure over an air interface, the retransmission including at least one data unit of a logical channel.

~~a radio system comprising a network infrastructure, wherein a user terminal is configured to associate data units of each logical channel with sequence numbers.~~

31. (Currently Amended) A radio system comprising:

a transmitter and a medium access control entity in the transmitter, wherein the medium access control entity is configured to associate each data unit of a logical channel with a logical channel-specific sequence number.

~~The user terminal of claim 30, wherein the user terminal is configured to associate data units of each logical channel with sequence numbers in a medium access control entity, in a radio link control entity or at an entity between a radio link control entity and a medium access control entity of a user terminal.~~

32. (Currently Amended) A radio system comprising:

a network infrastructure; and

at least one user terminal communicating with the network infrastructure over an air interface, wherein

a user terminal is configured to associate each data unit of a logical channel to be sent within one transmission time interval with one logical channel-specific sequence numbers;

the network infrastructure is configured to receive the data units of at least one logical channel associated with sequence numbers; and

the network infrastructure is configured to arrange the data units of each logical channel in order of the sequence numbers.

~~The user terminal of claim 30, wherein the user terminal is configured to transmit the data units to the network infrastructure and to perform at least one retransmission as a response to a request from the network infrastructure over an air interface, the retransmission including at least one data unit of a logical channel.~~

33. (Currently Amended) The A radio system of claim 32 comprising wherein a user terminal is configured to associate each data unit of a logical channel in one transmission time interval with one sequence number and the user terminal is configured to associate data units in successive transmission time intervals with successive sequence numbers.

~~a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, wherein a user terminal is configured to associate data units of each logical channel with sequence numbers.~~

34. (Currently Amended) An apparatus, wherein the apparatus is configured to associate each data unit of a logical channel with a logical channel-specific sequence number in a medium access control entity. ~~radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, wherein a user terminal is configured to associate data~~

~~units of each logical channel with sequence numbers in a medium access control entity, in a radio link control entity or in an entity between a radio link control entity and a medium access control entity.~~

35. (Currently Amended) An apparatus, wherein the apparatus is configured to associate each data unit of a logical channel to be sent within one transmission time interval with one logical channel-specific sequence number. ~~radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, wherein,~~

~~- a user terminal is configured to associate data units of each logical channel with sequence numbers;~~

~~the network infrastructure is configured to receive the data units of at least one logical channel associated with sequence numbers; and~~

~~the network infrastructure is configured to arrange the data units of each logical channel in order of the sequence numbers.~~

36. (Currently Amended) A communication method, the method comprising:
associating each data unit of a logical channel to be sent within one transmission time interval with one logical channel-specific sequence number in a transmitter. ~~A radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface~~

~~wherein a user terminal is configured to associate each data unit of a logical channel in one transmission time interval with one sequence number and the user terminal is configured to associate data units in successive transmission time intervals with successive sequence numbers.~~

37. (New) The method of claim 36, further comprising:

associating data unit of a logical channel with sequence numbers in a transmitter such that a sequence number is incremented at most by one per one incremented transmission time interval.

38. (New) A computer program product of a radio system, the computer program product being embodied on a computer readable medium and comprising program code for controlling a processor to execute a method comprising:

associating each data unit of a logical channel to be sent within one transmission time interval with one logical channel-specific sequence number in a transmitter.

39. (New) A radio system comprising:

a transmitter, the transmitter being configured to associate each data unit of a logical channel to be sent within one transmission time interval with one logical channel-specific sequence number.

40. (New) A user terminal of a radio system comprising a network infrastructure, wherein a user terminal is configured to associate each data unit of a logical channel to be sent within one transmission time interval with one logical channel-specific sequence number.

41. (New) An apparatus, wherein
the apparatus is configured to receive data units of at least one logical channel from a transmitter, each data unit of a logical channel sent within one transmission time interval being associated with one logical channel-specific sequence number in the transmitter; and

the apparatus is configured to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units.

42. (New) A network element of a radio system, wherein
the network element is part of the network infrastructure;
the network element is configured to receive data units of at least one logical channel from a transmitter, each data unit of a logical channel sent within one transmission time interval being associated with one logical channel-specific sequence number in the transmitter; and

the network element is configured to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units.

43. (New) An apparatus, wherein

the apparatus is configured to receive data units of at least one logical channel from a transmitter, each data unit of a logical channel being associated with a logical channel-specific sequence number in the transmitter; and

the apparatus is configured to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units in a medium access control entity.

44. (New) A computer program product of a radio system, the computer program product being embodied on a computer readable medium and comprising program code for controlling a processor to execute a method comprising:

arranging data units of each logical channel, in a network element of a network infrastructure, in order of the sequence numbers, each data unit of a logical channel sent within one transmission time interval being associated with a logical channel-specific sequence number in the transmitter.